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Where to go and what to take as a pledge for the future: EINFOSEs experience

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Abstract:

In order to discuss and develop suitable educational programs which bring in new skills and competencies for librarians and informatologists that will make them capable of acting as promoters and guides of change in a digital world, LIS departments have to work continuously at modernizing and improving their programs. While doing so, they need to think of basic professional values upon which new skills and competencies should be built. This opens the issue of professional identity and theoretical base which could contribute to a stronger position of the information sciences field in the academic and research family and community of practice.

While there is no doubt that it is possible to draw parallels between education programs in Information Science (IS), Library Science (LS), Library and Information Science (LIS), not to mention i-Schools offerings, and new lines of providers of education for big data management, economics of information, digital curation etc., there still does not seem to exist a consensus on what the differences and similarities are, or where boundaries should be drawn. Do we need to draw these boundaries or is this a question of core content and a series of specializations, flexible enough to react to the needs for new profiles and strong enough to confront the 'old fortress' known as university?

Based upon experience from a recently completed Erasmus plus project – EINFOSE (European Information Science Education: Encouraging Mobility and Learning Outcomes Harmonization) – the author intends to single out the project's key recommendations and offer them for further discussion.

Keywords: LIS/IS education; European Higher Institutions; EINFOSE project.

Introduction

There is no doubt that European LIS education is characterized by noticeable differences which could be found in “a variety of thematic profiles, subject emphases of curricula, program structures, levels, lengths, resources, host institutions and other features” (Kajberg, 2018). In addition, but with no less importance, lies the fact that LIS education in Europe is offered in a variety of languages. The historical distinctiveness and academic traditions have been strongly influencing the structural frameworks making the whole situation more complex. Even a fleeting look at other countries worldwide reveals the similarities with Europe as it comes to structures, curricula, profiles offered and status of educational units in LIS e. g. level of their independence or kind of relationship with other units or reasons for their merging with bigger/smaller units. Basically, we find a range of different approaches, convergence models and academic terminology for field professionals.

The Bologna Process, as it is well known, had aimed to establish and continuously develop a European Area of Higher Education (EHEA), in order to strengthen cooperation and support among Higher Education Institutions (HEIs), in their attempts to offer competitive programs inside and outside the European Union area. LIS education did not lag behind such attempts, although it is necessary to point out that funding for cooperative projects was not so easily available compared with some other areas, primarily in science. Two valuable funds helped in building important milestones: EU-SOCRATES-funded European curriculum development project in 2003-2005 and Erasmus+-funded EINFOSE project in 2016-2018.

It is also noticeable, but not yet researched, that the curriculum development project had a higher impact on LIS education in countries that needed radical improvement of their existing models than in countries that offered structured and flexible programs open towards quick adaptations or significant changes. In this paper we do not intend to go into the details of LIS education in Europe, as there are several research-based articles that emphasize the trends, list the relevant data and open up the floor for further discussions. For example, as part of Curriculum development program, B. Larsen (2005) presented data on the size of the student body and teaching staff of LIS units and concluded that LIS schools are small when it comes to the number of both students and teachers.

Ten years later, Borrego argued that no joint European approach to LIS education is discernible. In his LIS school survey (Borrego, 2015) he provided an up-to-date portrayal of European LIS education with a special attention to digital librarianship. Borrego’s article shed more light on the number of educational units (schools and departments) delivering LIS education in Europe; the various disciplines inside which the LIS units are classified; the size of these units; the kind of cooperation between LIS units; and the main characteristics of the programs that these units deliver. Borrego identified 220 institutions offering LIS programs in 26 European Union (EU) countries. Borrego also provided a list of the major disciplinary categories (Communication, Computing, Education, Humanities, Library & Information field, Management & Policy, Science & Engineering, Social & Behavioral) and a list of host faculty for LIS educational institutions as their units (e.g. Arts and Humanities, Social Sciences, Communication and Media, Business Studies and Computer Science) or as a program within a particular department.

Following the study (Virkus and Wood, 2004) that was conducted at the beginning of 21st century, Virkus (2015) examined current trends and developments in Higher Education (HE) in Europe with a focus on how LIS institutions have responded to the challenges and how

they approached innovation issues. The findings of the study were used to identify the main challenges for LIS education, e.g. technological changes, changes in policy making in HE at EU level, and two trends in particular that were expected to have a strong impact on policy decisions up to 2020: the proliferation of OERs and measuring learning through data-driven practice and assessment.

In their attempt to map the LIS education in Europe, Meschede, Ortiz-Repiso and Kluin (2018) presented a fresh set of data and concluded that educational systems regarding (L)IS in Europe are not uniform, as some countries showed almost a complete tendency towards LIS, some included a lot of LIS content, though there is also a smaller tendency towards Communication Sciences degrees or inclusion into Communication Science. In some countries almost all of the offered degrees are linked to Arts & Humanities, in others there is an inclination towards Knowledge & Information Management, Media Studies, Computer Science, or Archival Studies (cf. Meschede, Ortiz-Repiso and Kluin, 2018). It should be added that in some European countries e.g. Croatia there is a tradition in educating LIS students inside the wider area of Information Sciences, and that some other countries, e.g. Slovenia, link LIS to Publishing studies.

Another recent investigation, funded by IFLA, focused upon curriculum and library graduates' skills (Južnič, Renon and Heco, 2018). The results contributed to the discussions about the satisfaction of LIS institutions with the students' outcomes which are seen as problematic as LIS practitioners and their employers believe that LIS curricula are not responsive enough to the needs of current and future professionals.

As a profession as well as academic institutions that educate future LIS professionals, we have certainly entered the period of growing scepticism regarding the future of education for LIS profession. Moreover, it is obvious that academia needs to move from assumptions and constraints based upon the experience to evidence-based research that could bring in different perspectives of students and various stakeholders. One good example is the survey taken by Faletar Tanackovic et al. (2018) which presented the first phase of multi-national study which investigated students' perceptions of LIS profession and LIS programs. This localized snapshot of mixed views of student perceptions from Croatia and Turkey raises many questions and calls for further similar surveys in other countries.

Educational programs in LIS – what we have achieved and learned from

A decade ago – even today in some countries – educational programs were primarily focused on physical collections and services based upon the collections. Therefore, academic programs in LIS followed these needs, focusing primarily on organization of information, reference services, preservation and curation, and on how to use new technology to improve services. More precisely, one could argue that LIS education used to follow ALA's core competencies (ALA 2009) as well as introducing the knowledge and skills advocated by CILIP (2013): namely, professional expertise such as collection management, organization of recorded knowledge and information, technological knowledge and skills, reference and user services, research skills, literacy and learning, and administration, management and information compliance. In addition, curricula had introduced generic skills such as leadership and advocacy, customer focus, IT and communication. In the heart of this content lay professional ethics and values whose importance is increasing now that profit-making information providers have entered the scene.

Further on, it is visible from LIS programs offered nowadays, that LIS educators are confronted with the challenge of paying attention to the growing needs of the individual student and the way that information provision and curation are handled. They should also be able to anticipate future needs of practices and understand the ways new technology influence LIS education and practice. Technological changes within LIS education are well documented and analysed (see per example, Lynch, 2000; Virkus, 2008; Johannsen, 2015). However, discussions about the future of education for LIS and Information Sciences (IS) in general are rare, although some were provocative and motivating (for example, Moran and Marchionini, 2012), or open towards discussion based upon smaller portions of research (Borrego, 2015; FEIS, 2018).

As an initiative of the IFLA Section on Education and Training (SET) along with LIS Education in Developing Countries (SIG) and the section on Library Theory and Research (LTR) formed at the 2016 IFLA Satellite meeting at OCLC in Dublin Ohio, the working group named BSLISE started to investigate a possibility of establishing an international quality assessment framework to promote LIS educational standards. The goal of this framework was to enable the identification of core competencies for LIS professionals that will facilitate professional mobility. The study was undertaken to explore, through a global survey, the landscape of educational systems and professional certifications worldwide as it relates to credentialing, identity and authority (Južnič, Renon and Tibo, 2018).

Another important issue in European environment is the internationalization of LIS professional qualifications that requires necessarily mutual trust. On a policy-making and managerial level such trust can stem only from quality assurance systems, which are appropriately compatible and credible, so that they can be validated (Tammaro, 2015). In line with this, the EU provided a set of documents that reflect the idea of building generally acceptable principles and procedures of Quality Assurance (QA) processes (Brusoni, 2014). On the other side, there are experiences in practicing students and teachers' mobility at large that rise many questions. The issues arise from the already mentioned differences in European HE, ranging from administrative and organizational perspectives to the level of how, in various countries that participate in mobility programs, LIS education is understood with regard to the nature and content of the discipline itself.

How to cope with new challenges and needs, not losing the basic values

The discussions in the research community about the conception of the field raise the question of Information Science (SG.) or Information Sciences (Pl.) (Sonnenwald, 2016). The wider academic discipline called Information Sciences is obviously seen today to be very broad, covering the whole domains of Library Science, Library and Information Science, Documentation Science, Information Science, Archival Studies and even Museology. The educational units are marked up with different labels such as information science, information studies, information and communication studies, informatology, documentology, and information school. As in other parts of the World, LIS as well as IS in Europe witnesses many different explanations when it comes to the issue of defining the discipline in the academic landscape with specific methods and paradigms, as shown for example by the works of Robinson (2009), Bawden and Robinson (2013), Mechede, Ortiz-Repiso and Klain (2018), L. Kajberg (2018), or Ibeque, Aparac-Jelušić and Abadal, (2019).

Many LIS schools have merged locally with other departments/disciplines involving a stronger focus on information management and collaboration with business-oriented research; or other types of merger with schools focusing on computer science or informatics, humanities, health care, etc. However, in those cases the key concept “library” disappeared from the institutional mark. The diversity of such mergers appears challenging for the identity of the international field of LIS, which in some countries gradually became “a vital actor in the scholarly investigation of the digital transformation that broadly impact every sector in society” (Vilar et al., 2018).

Furthermore, we can see a possible divergence in the future information career paths, as suggested earlier by Corral (2005) and Moran and Marchionini (2012). On the one side there is an ever-growing need for *technical specialists* developing, managing and supporting the information infrastructure, and on the other side there is a need for *functional specialists* aligning information with business and personal needs, and applying information solutions to client problems not only in LIS sector but in other disciplines, including private business. The rising question here is how will these competencies be included in curricula in the future, and spread across various disciplines with information-oriented background or across those that are seeking to extend their professional knowledge with information-oriented content and skills. We talk here about education of information specialists, LIS professionals, ICT professionals and other professionals, interests and expertise e.g. other professions that seek to address new challenges in their own fields.

In a recent white paper by the IFLA BSLISE Working Group (2018, p. 2), it was pointed out that a formal undergraduate or graduate degree is required in many countries; however, there is no correspondence/equivalence among degrees. For many programs, there is no international or recognized standard against which they can be benchmarked for transferability or reciprocity. The same goes for certifications which are required in many responding countries, but are mostly recognized locally, without an international recognition. IFLA BSLISE working group thus shaped some key recommendations regarding LIS education which refer, among others, to the need to identify core and other competencies for transferability and reciprocity, to join efforts in developing an international framework for the assessment of quality standards in LIS education, and to encourage discussions about how to define and understand what the broader LIS field means and its implications for LIS education and professional development.

The question at the core of all discussions is: Do we need to draw boundaries between disciplines that are dealing with the ‘information chain’ (Bowden and Robinson, 2013), or is this a question of core content and a series of specializations, flexible enough to react to the needs for new profiles and strong enough to confront the ‘old fortress’ known as university? How should we encourage mobility and internationalization in order to build international network of students and scholars in the LIS field? The elements which could strengthen the ability of universities to internationalize in general refer to harmonization of core content in LIS, structure of the programmes, teacher’s engagement at international summer schools, agreement about entry requirements for the graduate programmes, etc. Some of these issues have yet to be addressed among European universities. The EINFOSE project focused upon the harmonization of core content and entry requirements.

EINFOSE's approach and recommendations

Various aspects of harmonization in European Higher Education Institutions (HEIs) that offer programs in library and information studies (LIS) have been studied since the early 1990s. In 2005, a project, funded also through Erasmus program, resulted in an international conference organized in Copenhagen, and several articles and one e-book on curriculum development (Lörling, L. & L. Kajberg, 2005). Since then, there have been several attempts to conduct a follow-up study as proposed by EUCLID (*European Association for Library & Information Education and Research*), but none of them was successful. It was only in 2016 that a proposal for EINFOSE project, submitted by a group of European scholars answering an Erasmus+ call, was accepted for a two-year funding period (2016-2018).

The aim of the project was to study and ultimately overcome the differences among entry requirements and learning outcomes in the field of Library and Information Science at eight European Universities, partnering institutions in the EINFOSE project: University of Barcelona, Spain; University of Borås, Sweden; University of Graz, Austria; Hacettepe University, Turkey; University of Hildesheim, Germany; University of Ljubljana, Slovenia; University of Osijek, Croatia and University of Pisa, Italy. These differences have been causing large mobility barriers between European HEIs that offer Master of Arts (MA) in IS and problems in recognition of learning outcomes and ECTSs (European Credit Transfer System) at the EU level (Aparac-Jelušić, Faletar Tanacković and Petr Balog, 2018).

One of the project's working hypothesis was that common entry requirements could mitigate or even eliminate the differences in enrolment procedures at different HEIs that offer programs in LIS and might contribute to the higher enrolment of students with different educational background at the graduate level programs in IS. The project seeks to investigate how these barriers could be eliminated or lowered.

The EINFOSE objectives were in line with *ET2020*, especially its key priorities from the Modernization agenda (EC, 2011) that relate to the improvement of the quality and relevance of teaching and learning, promotion of student' and staff' mobility, cross-border cooperation and the emphasis on the importance of the "knowledge triangle". All partners involved in EINFOSE project are determined to further develop their partnership network, share experience with other colleagues, and to play an active part in the implementation of the goals of the 2013 *Communication on Opening Up Education* (EC, 2013), in particular of those goals that might result in easier recognition of digital skills and qualifications across borders (Aparac-Jelušić, Faletar Tanacković and Petr Balog, 2017).

As explained by Vilar et al. (2018), in the case of the EINFOSE project, the European Qualifications Framework (EQF) is of a particular significance. The EQF is a translation device to make national qualifications more readable across Europe. The core of EQF are eight reference levels describing learning outcomes of each educational level. Those learning outcomes are divided into 'Knowledge', 'Skills', and 'Responsibility and Autonomy'. It is advisable that LIS/IS HE educators design programmes that result with learning outcomes of levels 5th-8th.

Next to EQF, the project also emphasizes the importance of ESCO (European Skills, Competencies and Occupations) – a classification system covering skills, competencies, qualifications and occupations. Its goal is to make the European labour market more effective and enable the worlds of work and education/training to communicate more

effectively. ESCO provides the description of occupations (e.g. Information and communications technology professionals), skills/competencies and qualifications and is linked to relevant international classifications and frameworks (e.g. ISCO, EQF). For the area of IS HEIs it is important to pay particular attention to the reusability of skills obtained through LIS/IS education. According to ESCO, the skill reusability level refers to a wide range of applications for a certain knowledge, skill or competence (ESCO, 2018). Therefore, beside sector- and occupation-specific skills, IS HEIs should pay special attention to the development of both transversal and cross-sectoral knowledge, skills, and competencies (Vilar et al., 2018).

One of the main outcomes of the EINFOSE project in general was the development of *Policy Recommendation for the Entry Requirements and Learning Outcomes Harmonization*. The draft of this document was available for public discussion at the EINFOSE conference *International Symposium on the Future of Education in Information Science – FEIS* which was held in Pisa, Italy, in September 2018 (<http://feis2018.di.unipi.it>).

Policy Recommendations for the Harmonization of the Entry Requirements and Learning Outcomes in Information Science in Europe

The EINFOSE Recommendations for the harmonization of entry requirements and learning outcomes in Information Science were based on: a review of professional literature, the findings of the analysis of Master's programmes organised by EINFOSE partners, discussions at the Multiplier Event in Ljubljana in April 2018, formal and informal collegial discussions, discussions and topics presented at the two European Summer Schools in Information Science in 2017 (Katlenburg) and 2018 (Graz), and presentations and discussions at FEIS conference, held in Pisa in 2018.

During the discussions, the contribution of LIS/IS professions to society, accompanied and supported by ethics, was highlighted. When discussing the issues of entry requirements and harmonization of learning outcomes, it was obvious that discussants from different institutions had different emphases within this context. This basically considers the perceptions of LIS/IS from the perspective of various stakeholders in various countries (policy-makers, decision-makers, employers, educators, students and potential students) e.g. how do they see the role of LIS/IS in the society, in the economy; what potential is there to change this role; what do they see as a basic content of LIS/IS studies. Furthermore, the difficulty of studies offered and the reasons to decide to study LIS/IS was touched upon. Bearing all this in mind, EINFOSE Recommendations were organized at several levels for different groups of agencies: partners of the EINFOSE project, LIS/IS academic units, EU programme officers in the partner countries, HE authorities in European countries, potential employers of the LIS/IS graduates and to European Commission.

As for the partners in the EINFOSE project, it was agreed that the discussion on the contribution of LIS/IS to society be continued and that a wider academic community be involved. The discussion would be focussed on the key values and ethics of information profession and on promoting the results of the project to the stakeholders at the governmental level. Other results would include emphasizing the adaptability of Information Science graduates to different job tasks and the combination of “soft” social and “hard” technology skills in promoting the results of the project to potential employers. Besides, the organization of the Summer School would be continued, provided the proper funding was found, to make

it a sustainable activity, investing in applications for the resources needed to market and run the Summer School.

As regards LIS/IS academic units in the HE institutions in European countries and the iSchools network, we recommended that discussions of the common learning outcomes of the LIS/IS programmes on the Master's level be continued; that the diversity of the programmes with respect to existing labour markets, potential student audiences, possible specializations and other criteria be explored; that maps of student and teacher mobility in Europe (and outside) be prepared, with regard to identified similarities and differences; and that the variety of study profiles and potential job profiles of LIS/IS graduates be promoted to potential employers in different countries.

As far as the EU programme offices in the member countries are concerned, they were invited to support the initiatives of the LIS/IS educators in drawing the maps of mobility between European Information Science departments and schools. To the HE authorities in European countries it was suggested that they support the efforts of the LIS/IS departments in internationalization of their educational programmes; and that they provide resources for the organization of the surveys on the actual employment rate of the Information Science graduates within European countries and they harmonize these efforts on the European level.

Of special importance is the relationship with potential employers of the LIS/IS graduates. To them it was suggested that they participate in the discussions about the knowledge and skills of LIS/IS graduates and their relevance for potential job market; that they show flexibility and openness to changes and developments of the society, technology etc. which reflect in their fields and in Information Science; that they offer internships and test positions for Information Science graduates; and that they provide opportunities for beginners in the field.

Finally, EINFOSE Recommendations referred to EC (for example, Education, Audiovisual and Culture Executive Agency – EACEA; Employment, Social Affairs and Inclusion; European Research Council Executive Agency; Research Executive Agency) from whom we expect that they respond to the initiatives of the LIS/IS educators and provide support to further exploration of harmonization means for the LIS/IS education in European countries (and elsewhere); and that they provide continuing funding of the Summer School.

The partners agreed that future changes in the educational programmes should address the issue of major components of all educational programmes: the students, the faculty, the curriculum and the modes of delivery. The emphasized point, which is worth to be considered carefully, is which parts of the educational programmes are worth keeping, which should be removed, adapted, added. In this regard, besides obvious characteristics of successful information professionals such as intelligence, creativity, communication skills, and desire to serve others, LIS/IS field should endeavour to recruit young people who have different BA backgrounds, and encourage high tolerance for ambiguity, analytical problem-solving talent, intuitive or empathetic interaction styles, outgoing personalities, etc. As regards faculty, we recognized a growing need to recruit and promote both, generalists and specialists who might bring in their knowledge and expertise, participate in collaborative teaching and research with colleagues from other departments/schools, both locally and internationally. Finally, as regards the curriculum, EINFOSE project recommended that it should be designed so as to support the core ideas and techniques from LIS/IS field “that must be included in every student’s program or individualize curricula to learners” and “designed in such a way that allows evaluation of student learning outcomes and career impact” (Vilar et al., 2018)

As teaching is concerned, a document was prepared (Didactic Framework, 2018) which called for new didactic approaches and principles that allow the right balance of individualized and group learning, face to face and online learning, coursework and in situ learning.

Concluding remarks

In this paper I discussed the background, approach and some of the results of the EINFOSE project, funded by Erasmus+. Within the focus of my interest is how to develop suitable educational programs which bring in new skills and competencies of librarians, informatologists and other professionals that are interested in the 'information chain'. Probably more than ever before, there is a need to educate professionals who are capable of acting as promoters and guides of change in a digital world, and to motivate LIS/IS academic units to work continuously at modernizing and improving their programs. While doing so, they need to think of basic professional values upon which new skills and competencies should be built. This opened the issue of professional identity and theoretical base which could argue for stronger position of the wider area of Information Sciences into the academic and research family and community of practice.

Based upon experience from recently completed Erasmus plus project – EINFOSE (European Information Science Education: Encouraging Mobility and Learning Outcomes Harmonization) – I intended to single out its key recommendations and offer them for further discussion.

References

ALA (2009). *ALA's Core competences of Librarianship*. Available at: <https://lianza.org.nz/professional-registration/bodies-knowledge>.

Aparac-Jelušić, T., S. Faletar Tanacković and K. Petr Balog (2018). Approach to harmonization of entry requirements for graduate program in Information Science at European Higher Institutions: EINFOSE project. In: Wang, P, A. Green and S. Assefa (eds). *Proceedings of the Association for Library and Information Science Education Annual Conference, ALISE 2018: The Expanding LIS Education Universe*. (Pp 6-10). Seattle: ALISE. Available at: <https://www.ideals.illinois.edu/handle/2142/98928>.

Borrego, Á. (2015) Library and Information education in Europe: an overview. *BiD: textos universitaris de biblioteconomia i documentació*, 35. Available at: <http://bid.ub.edu/pdf/35/en/borrego.pdf>.

Bowden, D. and L. Robinson (2013). *Introduction to information science*, Chicago: Neal-Schuman.

Brusoni, M. et al. (2014). *The Concept of excellence in higher education*. Brussels: ENQA (Occasional papers; 20).

CILIP (2013) *CILIP Professional Knowledge and Skills Base*. Available at: <https://www.cilip.org.uk/page/PKSB>.

Corrall, Sheila (2005). Developing models of professional competence to enhance employability in the network world. In: Continuing professional development - Preparing for new roles in libraries: A voyage of discovery. In: Genoni, P. & G. Walton (eds.). *Sixth World Conference on Continuing Professional Development and Workplace Learning for the Library and Information Professions*. (pp. 26-40). (IFLA Publications; 116). München: De Gruyter Saur. Retrieved from: <https://pdfs.semanticscholar.org/731c/9414962f07eb6bcb92489408b54b1765c5f1.pdf>.

EC. (2011). *European Commission Agenda for the Modernisation of Europe's Higher Education Systems*. Brussels. Retrieved from: http://ec.europa.eu/education/library/policy/modernisation_en.pdf.

EC. (2013). *European Commission Opening up Education: Innovative teaching and learning for all through new Technologies and Open Educational Resources*. Brussels. Available at: <http://ec.europa.eu/transparency/regdoc/rep/1/2013/EN/1-2013-654-EN-F1-1.Pdf>.

EINFOSE. (2017). Project's main page: <http://einfose.ffos.hr>.

Faletar Tanacković et al. (2018). Student perceptions of LIS programs and profession: Study among undergraduates in Croatia and Turkey. In: Aparac-Jelušić et al. (eds). *The Future of education in Information Science: Proceedings from FEIS – International EINFOSE Symposium 10–11 September 2018 Pisa, Italy*. (Pp 46-61). Osijek: Faculty of Humanities and Social Sciences. Available at: einfose.ffos.hr/feis-2018/proceedings.

FEIS (2018). Aparac-Jelušić et al. (eds). *The Future of education in Information Science: Proceedings from FEIS – International EINFOSE Symposium 10–11 September 2018 Pisa, Italy*. Osijek: Faculty of Humanities and Social Sciences. Available at: einfose.ffos.hr/feis-2018/proceedings.

Ibeque, F., T. Aparac-Jelušić, and E. Abadal (2019). The quest for umbrella terms in Information Science. Tracking the paternity of *informatology* and *informatics* (*Information Research*, in print).

IFLA BSLISE Working Group (2018). *Building strong LIS education: A call to global and local action – An IFLA BSLISE Working Group White Paper*. Cape Town: University of Cape Town Libraries. Retrieved from: <http://openbooks.uct.ac.za/liseducation/index.php/liseducation/catalog/view/1/1/11-2>.

International Standard Classification of Occupations (ISCO). Retrieved from: <http://www.ilo.org/public/english/bureau/stat/isco/>.

Johannsen, C. G. (2015). From clients to participants: How information technology impacts relationships between professionals and users. In: Baker, D. & W. Evans (eds.). *Digital information strategies: From applications and content to libraries and people*. (Pp. 157-165). Amsterdam: Elsevier; Chandos Publishing.

Južnič, P., F. Renon and T. Heco. (2018). Towards building strong LIS education: Preliminary findings from an international environmental scan of LIS education, certification and professional identity (European focus). In: Aparac-Jelušić et al. (eds). *The Future of education in Information Science: Proceedings from FEIS – International EINFOSE Symposium 10–11 September 2018 Pisa, Italy*. (Pp 112-122). Osijek: Faculty of Humanities and Social Sciences. Available at: einfose.ffos.hr/feis-2018/proceedings

Kajberg, L. (2018). Reflections from ‘backstage’: a still keen LIS observer’s look at LIS education and Europe. In: Aparac-Jelušić et al. (eds). *The Future of education in Information Science: Proceedings from FEIS – International EINFOSE Symposium 10–11 September 2018 Pisa, Italy*. (Pp 241-257). Osijek: Faculty of Humanities and Social Sciences. Available at: einfose.ffos.hr/feis-2018/proceedings.

Larsen, J. B. (2005). A survey of Library & Information Science schools in Europe. In: Kajberg, L. and L. Lørring (eds.). *European curriculum reflections on Library and Information Science education*. (Pp 232-242). Copenhagen: Royal School of Library and Information Science. Retrieved from: http://www.library.upt.ro/LIS_Bologna.pdf

Löring, L. and Kajberg, L. (eds) (2005). *European curriculum reflections on Library and Information Science education*. Copenhagen: The Royal School of Library and Information Science. Retrieved from: http://www.library.upt.ro/LIS_Bologna.pdf.

Lynch, C. (2000). From automation to transformation: forty years of libraries and information technology in higher education. *EDUCAUSE Review*, 35 (1) 60-68. Retrieved from: <https://er.educause.edu/articles/2000/1/from-automation-to-transformation-forty-years-of-libraries-and-information-technology-in-higher-education>.

Marchionini G. & Moran B. (eds.) (2012). *Information professionals 2050: Educational possibilities and pathways*. School of Information and Library Science University of North Carolina at Chapel Hill. Retrieved from: <https://sil.unc.edu/sites/default/files/publications/Information-Professionals-2050.pdf>.

Meschede, C., V. Ortiz-Repiso, and M. Kluin (2018). Library and Information Science education in Europe: Building an interactive map. In: Aparac-Jelušić et al. (eds). *The Future of education in Information Science: Proceedings from FEIS – International EINFOSE Symposium 10–11 September 2018 Pisa, Italy*. (Pp 217-222). Osijek: Faculty of Humanities and Social Sciences. Available at: einfose.ffos.hr/feis-2018/proceedings.

Robinson, L. (2009). Information science: Communication chain and domain analysis. *Journal of Documentation*, 65, 4: 578-591.

Sonnenwald, D.H. (red.) (2016). *Theory development in the Information Sciences*. Austin: University of Texas Press.

Vilar, P. et al. (2018). *Policy recommendation for the entry requirements and learning outcomes harmonization*. Available at: http://einfose.ffos.hr/documents/EINFOSE_IO5_Policy_Recommendations.pdf.

Tammaro, A. (2015). Current Trends of Quality Assurance Models in LIS Education. In: M. Miwa and S. Miyahara (eds). *Quality assurance in LIS education: An international and comparative study*. (Pp 169-186). Berlin: Springer.

Virkus, S. and L. Wood (2004). Change and innovation in European LIS education. *New Library World* 105, 9/10:320-329.

Virkus, S. (2008). *LIS education in Europe: Challenges and opportunities*. In: *Informationskonzepte für die Zukunft : ODOK '07*. (Pp. 191–204). Neugebauer Verlag.
http://eprints.rclis.org/14978/1/odok07_virkus.pdf.

Virkus, S. (2015). Change and innovation in European Library and Information Science Education. *BiD: textos universitaris de biblioteconomia i documentació*, 35. Available at:
<http://bid.ub.edu/en/35/virkus.htm>.